

answers²

Technisches Handbuch / Technical Manual

Mainboard D1544

Deutsch / English



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Are there ...

... any technical problems or other questions you need clarified?

Please contact:

- your sales partner
- your sales outlet

You will find further information in the manuals "Safety" and "Ergonomics".

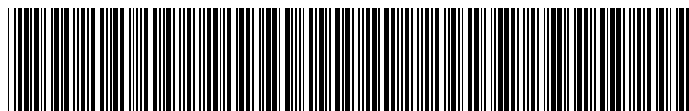
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Deutsch

English

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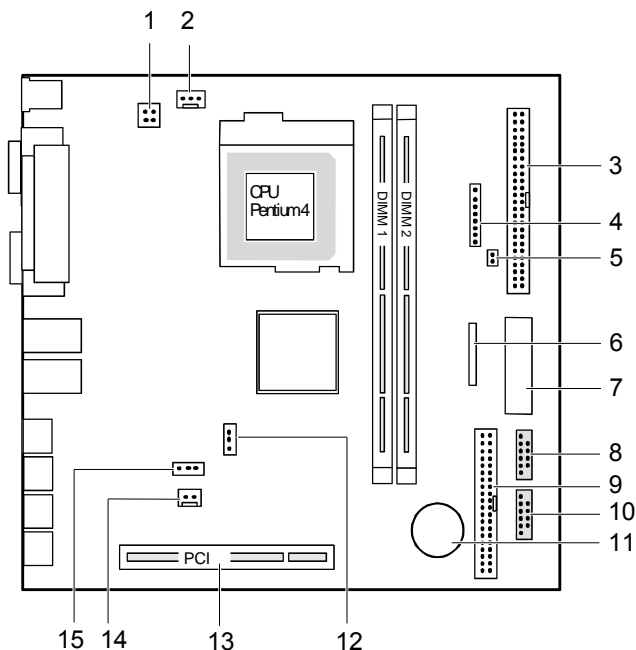
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Übersicht/Overview Mainboard D1544

Interne Anschlüsse und Steckplätze / Internal connectors and slots

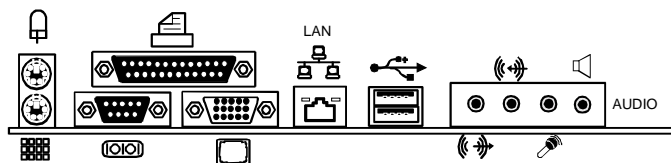


- 1 = Stromversorgung Prozessor / Power supply processor
- 2 = Lüfter Prozessor / Fan processor
- 3 = IDE-Laufwerke 3/4 / IDE drives 3/4
- 4 = Bedienfeld / Front panel
- 5 = Gehäuseöffnung / Intrusion
- 6 = Diskettenlaufwerk / Floppy disk drive
- 7 = Stromversorgung / Power supply
- 8 = USB C/D (SmartCard)
- 9 = IDE-Laufwerke 1/2 / IDE drives 1/2

- 10 = USB E/F
- 11 = Batterie / Battery
- 12 = Steckbrücke J4 / Jumper J4
- 13 = PCI-Steckplatz / PCI-Slot
- 14 = Lautsprecher-Anschluss / Speaker connector
- 15 = Steckbrücke 2 / Jumper 2

Optionale Komponenten / Optional components

Externe Anschlüsse / External connectors



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Mainboard D1544

Your mainboard is available in different configuration levels. Depending on the configuration chosen, some of the hardware components described may not be available on your mainboard.

Further information

Additional descriptions (e. g. of the drivers) are contained:

- in the readme files on your hard disk
- on the driver floppy disks included
- on the CD "Drivers & Utilities Collection" or "Drivers & Utilities" or "ServerStart".



The programme *Acrobat Reader* must be installed to be able to open the manuals.
For more details please read the according readme.txt files.

Notational conventions

The meanings of the symbols and fonts used in this manual are as follows:



indicates information which is important for your health or for preventing physical damage.



indicates additional information which is required to use the system properly.

- Text which follows this symbol describes activities that must be performed in the order shown.
- This symbol indicates that you must enter a blank space (press the Space Bar) at this point.
- ↵ This symbol indicates that you must press the Enter key.

Text in this typeface indicates screen outputs.

Text in this bold typeface indicates the entries you make via the keyboard.

Text in italics indicates commands or menu items.

"Quotation marks" indicate names of chapters or terms.

Important notes

With the mainboard installed you must open the system to access the mainboard. How to dismantle and reassemble the system is described in the operating manual accompanying the system.

Connecting cables for peripherals must be adequately shielded to avoid interference.



Observe the safety notes in the operating manual of your system.

Incorrect replacement of the lithium battery may lead to a risk of explosion. It is therefore essential to observe the instructions in the "Add-on modules / Upgrading" - "Replacing the lithium battery" section.

Components can become very hot during operation. Ensure you do not touch components when making extensions to the mainboard. There is a danger of burns!



The shipped version of this board complies with the requirements of the EEC directive 89/336/EEC "Electromagnetic compatibility".

Compliance was tested in a typical PC configuration.

When installing the board, refer to the specific installation information in the manual for the receiving device.



The warranty is invalidated if the system is damaged during the installation or replacement of expansions. Information on which expansions you can use is available from your sales outlet or the customer service centre.

Information about boards

To prevent damage to the mainboard, the components and conductors on it, please take great care when you insert or remove boards. Take great care to ensure that extension boards are slotted in straight, without damaging components or conductors on the mainboard, or any other components, for example EMI spring contacts.

Remove the plug from the mains outlet so that system and mainboard are totally disconnected from the mains voltage.

Be careful with the locking mechanisms (catches, centring pins etc.) when you replace the mainboard or components on it, for example memory modules or processors.

Never use sharp objects (screwdrivers) for leverage.



Boards with electrostatic sensitive devices (ESD) are identifiable by the label shown.

When you handle boards fitted with ESDs, you must, under all circumstances, observe the following:

- You must always discharge static build up (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Remove the power plug from the mains supply before inserting or removing boards containing ESDs.
- Always hold boards with ESDs by their edges.
- Never touch pins or conductors on boards fitted with ESDs.

List of features

Onboard features	D1544
Chipset	i845G/GV
Board size	218,6 mm x 230 mm
VGA	□
Audio	✓
Buzzer / int. Speaker Support	- / ✓
LAN / with Alert-on-LAN	✓ / ✓
IDE RAID	-
FireWire™ / 1394 / i.LINK®	-
HI-SPEED USB 2.0	✓
SmartCard Reader Support (USB / serial)	□ / -
Temperature monitoring	✓
System Monitoring	✓
Fujitsu Siemens Computers Keyboard Power Button Support	✓

Internal ports

DIMM slots (DDR 266 SDRAM)	2
AGP Slot (4/8x, 32 bit, 66 MHz, 1.5 V)	-
PCI slot (32-bit, 33 MHz, 5 V and 3.3 V)	2
CNR Slot (Type A, AC'97 only)	-
IDE Interface (Ultra DMA/100)	1
Floppy Interface (up to 1.44 Mbyte)	1
S/PDIF* (digital audio)	-
CD / AUX audio input	1 / -
Frontpanel Audio (headphone, microphone)	-
Wake On LAN	□
IEEE 1394 connector* (FireWire™ / i.LINK®)	-
USB Ports* (2.0, ~480 MB/s)	2
Serial Ports* (FIFO, 16550 compatible)	-
Fan Connectors PSU** / CPU / AUX1 / AUX2	- / 1 / - / -
SMBus Connector* (Case Temperature)	-
Intrusion Connector* (Case Open)	✓

External ports	D1544
VGA	1
Audio Mic. in / Line in / Line out / Speaker out	1 / 1 / 1 / 1
Game/MIDI	-
LAN (RJ-45)	1
PS/2 mouse/keyboard	1 / 1
USB Ports (2.0, ~480 MB/s)	4
Serial Ports (FIFO, 16550 compatible)	1
Parallel Port (EPP/ECP)	1

* for use with internal devices or optional Front or Rear panel

** not supported by standard power supplies

Special features

Your mainboard is available in different configuration levels. Depending on the configuration, your mainboards is equipped with or supports the features described in the following.

Thermal Management and System Monitoring



Thermal
Management



System
Monitoring

A microcontroller reliably protects your PC against damage caused by overheating. Overheating can lead to the data loss or processor damage. An ingenious fan control and monitoring system prevents unnecessary noise. Should the processor nevertheless become too hot at the maximum fan speed, then the processor clock rate will automatically be reduced so that the system continues to run stably. In addition, the microcontroller offers monitoring of, for example, system voltages (12 V, 5 V, CMOS), opening of the case and a watchdog function. The microcontroller operates independently of the operating system and the processor. All values are displayed with *DeskView*, *DeskViewOEM* or *SystemGuard*.

Harddisk Password



HDD
Password

A password assignment for the hard disk is only possible with suitable, newer hard disks and prevents unauthorised access to the stored data.

Harddisk Password is activated in the *BIOS Setup*.

DeskView / DeskViewOEM



The network-capable manageability software *DeskView/DeskViewOEM* mainly consists of three modules:

- *DeskInfo* shows the most important device data of the PCs in a network (local and/or on an administrator PC).
- *DeskAlert* monitors the operability of all major components and triggers alarms if necessary depending on the mainboard variant.
- *DeskFlash* carries out a BIOS update under Windows.

IA-PC



Instantly Available PC ensures fast availability of the PC from an energy-saving mode. Within just a few seconds the PC is in exactly the same state it was in when it was switched off without time-consuming booting. Depending on the operating system, the PC can be switched into an energy-saving mode with applications open by pressing the ON/OFF switch.












Interfaces and connectors

The positions of the interfaces and connectors are shown on page "Cover".

The components and connectors marked are not necessarily present on the mainboard.

External ports

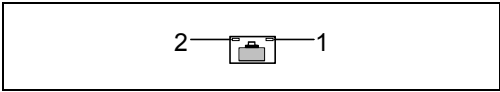
The positions of the external ports are shown on page "Cover".

	PS/2 keyboard port, purple		PS/2 mouse port, green
	Serial interface, turquoise		Parallel port/Printer, burgundy
	LAN connector		USB - Universal Serial Bus, black
	Audio output (Line out), light green		Microphone jack (mono), pink
	Audio input (Line in), light blue		Speaker out, orange
	VGA connector, blue (monitor)		

LAN connector

This mainboard has an Intel GD82562EX LAN controller (10Base-T/100Base-TX). The LAN controller is equipped with a 2 KB transmission and receiving buffer (FIFO) and supports WOL function through Magic Packet™.

The LAN RJ45 connector has two LEDs (light emitting diodes).



- 1 = a connection exists (e.g. to a hub).
- 2 = Link Mode: the LAN connection is active.
WOL mode: a Magic Packet™ is being received.

Graphics port - Supported screen resolutions

Depending on the operating system used, the screen resolutions in the following table refer to the mainboard screen controller.

If you are using an external screen controller, you will find details of supported screen resolutions in the operating manual or technical manual supplied with the controller.

Screen resolution	Refresh rate (Hz)	bpp	Colour
640 x 480	120	32	32 bit
800 x 600	120	32	32 bit
1024 x 768	100	32	32 bit
1280 x 1024	100	32	32 bit

Internal ports and connectors

The positions of the internal ports and connectors are shown on the Cover. Additional information on some ports is also provided here.

Hard disk connection

An ultra ATA/66 or ultra ATA/100 hard disk must be connected with a cable especially designed for the ultra ATA/66 or ultra ATA/100 mode.

- Connect the end of the cable marked with blue to the mainboard.

Add-on modules / Upgrading



Exit energy-saving mode, switch off the system and remove the power plug from the mains outlet, before carrying out any of the procedures described in this chapter! Even when you have switched off the device, parts (e.g. memory modules, AGP and PCI extension boards) are still supplied with power.

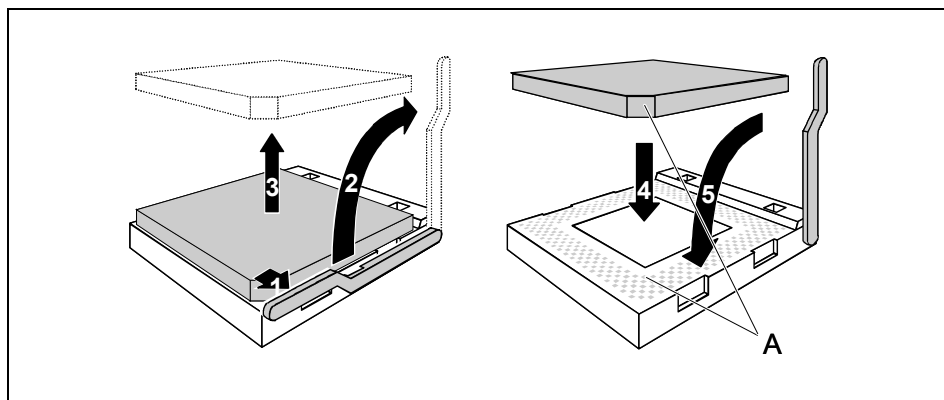
Replacing processor

Technical data

- Pentium 4 with 400/533 MHz Front Side Bus in the mPGA478 design up to 2.4 GHz
- Celeron with 400 MHz Front Side Bus in the mPGA478 design up to 2.0 GHz

Removing and installing processors

- Remove the fan that there may be and the heat sink.



- Pull the lever in the direction of the arrow (1) and lift it as far as it will go (2).
- Remove the old processor from the socket (3).
- Insert the new processor in the socket so that the angled corner of the processor matches the coding on the socket (A) with regard to the position (4).



The angled corner of the processor can also be at a different location than shown in the illustration.

- Push the lever back down until it clicks into place (5).

Mounting heat sink

Be sure to use heat conducting material between the processor and the heat sink. If a heat conducting pad (rubber-like foil) is already applied to the heat sink, then use it. Otherwise you must apply a very thin layer of heat conducting paste.

Heat conducting pads can only be used once. If you remove the heat sink, you must clean it and apply new heat conducting paste before you remount it.

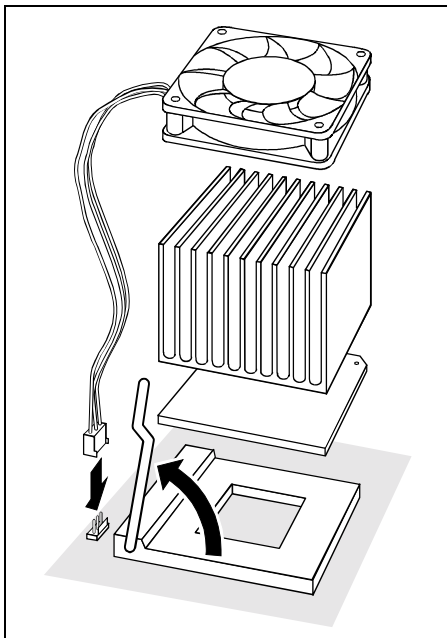
Please note that, depending on the heat sink used, different heat sink mounts are required on the mainboard.



If a counter-plate is mounted on the underside of the mainboard for reinforcement, no heat sinks of the type "Intel Boxed" may be used. Otherwise the retaining clips of the heat sink will be damaged.

When using an "Intel Boxed" heat sink, the mainboard must be converted. This conversion set is either included with the mainboard or is available separately.

If no counter-plate is mounted, you can use both "Intel Boxed" heat sinks and standard heat sinks. If you use the "Intel Boxed" heat sink, the mainboard will bend due to the high pressure of the retaining clips. This behaviour is specified by Intel.



- ▶ Depending on the configuration variant, you must pull a protective foil off the heat sink or coat the heat sink with heat conducting paste before fitting it.
- ▶ Depending on the processor variant, clips may also be supplied for mounting the heat sink that fix it in place.
- ▶ When you have mounted the optional fan, connect the fan plug to the corresponding connection on the mainboard.

Upgrading main memory

Technical data

Technology: DDR 266 unbuffered DIMM modules
184-Pin; 2.5 V; 64 Bit, no ECC

Size: 128 Mbytes to 1 Gbyte DDR 266 SDRAM

Granularity: 128, 256 or 512 Mbyte for one socket

At least one memory module must be installed. You may only use up to two double-sided or two single-sided memory modules for DDR 266.

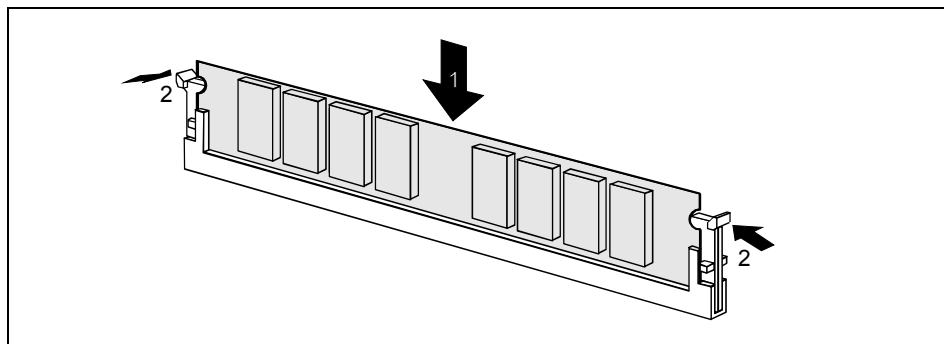
Memory modules with different memory capacities can be combined.



You may only use unbuffered 2,5 V memory modules. Buffered memory modules are not supported.

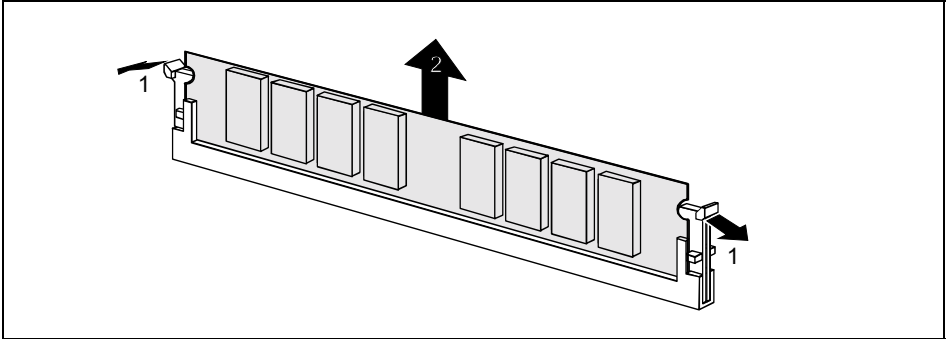
DDR-DIMM memory modules must meet the PC2100 specification.

Installing a memory module



- Push the holders on each side of the memory compartment outwards.
- Insert the memory module into the location (1).
- At the same time flip the lateral holders upwards until the memory module snaps in place (2).

Removing a memory module



- ▶ Push the clips on the right and left of the compartment outward (1).
- ▶ Carefully remove the memory module from the compartment (2).

Adding PCI cards

Technical data:

32 bit / 33 MHz PCI slots
 5 V and 3.3 V supply voltage
 3.3 V auxiliary voltage

PCI bus interrupts - Selecting correct PCI slot



To achieve optimum stability, performance and compatibility, avoid the multiple use of ISA IRQs or PCI IRQ Lines (IRQ sharing). Should IRQ sharing be unavoidable, then all involved devices and their drivers must support IRQ sharing.

PCI IRQ Lines connect AGP slots, PCI slots and onboard components to the interrupt controller. PCI IRQ Lines are permanently wired on the mainboard.

Which ISA IRQs are assigned to the PCI IRQ Lines is normally automatically specified by the BIOS.

Monofunctional expansions cards:

Standard AGP and PCI expansion cards require a maximum of one interrupt, which is called the PCI interrupt INT A. Expansion cards that do not require an interrupt can be installed in any desired slot.

Multifunctional expansion cards or expansion cards with integrated PCI-PCI bridge:

These expansion cards require up to four PCI interrupts: INT A, INT B, INT C, INT D. How many and which of these interrupts are used is specified in the documentation provided with the card.

The assignment of the PCI interrupts to the PCI IRQ Lines is shown in the following table:

PCI Interrupt Line	Onboard Controller								PCI slot		
	USB 1,1			USB 2,0	SMBus	AC97			AGP	1	2
	1 st	2 nd	3 rd			Audio	Modem	LAN			
1 (A)	A	-	-	-	-	-	-	-	-	-	-
2 (B)	-	-	-	-	A	A	-	-	-	-	-
3 (C)	-	-	A	-	-	-	-	-	-	-	-
4 (D)	-	A	-	-	-	-	-	-	-	C	B
5 (E)	-	-	-	-	-	-	-	A	-	-	-
6 (F)	-	-	-	-	-	-	-	-	-	A	D
7 (G)	-	-	-	-	-	-	-	-	-	B	A
8 (H)	-	-	-	A	-	-	-	-	-	D	C

Use the first PCI slots that have a single PCI IRQ Line (no IRQ sharing). If you must use another PCI slot with IRQ sharing, check whether the expansion card properly supports IRQ sharing with the other devices on this PCI IRQ Line. The drivers of all cards and components on this PCI IRQ Line must also support IRQ sharing.

Replacing the lithium battery

In order to permanently save the system information, a lithium battery is installed to provide the CMOS-memory with a current. A corresponding error message notifies the user when the charge is too low or the battery is empty. The lithium battery must then be replaced.



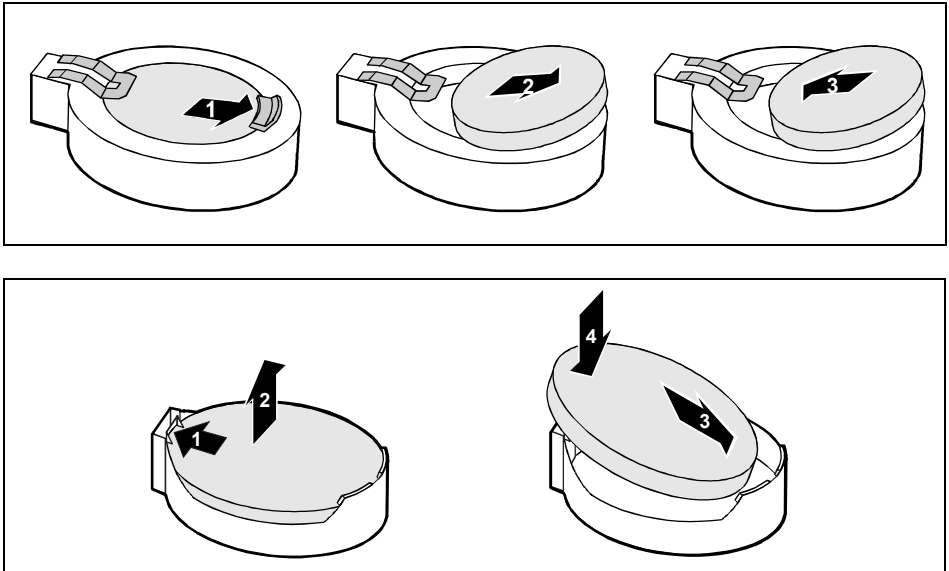
Incorrect replacement of the lithium battery may lead to a risk of explosion!

The lithium battery may be replaced only with an identical battery or with a type recommended by the manufacturer.

Do not throw lithium batteries into the household waste. They must be disposed of in accordance with local regulations concerning special waste.

Make sure that you insert the battery the right way round. The plus pole must be on the top!

The lithium battery holder exists in different designs that function in the same way.



- Press the locking lug in the direction of the arrow; the battery jumps somewhat out of the holder (1).
- Remove the battery (2).
- Push the new lithium battery of the identical type into the holder (3) and press it downward until it engages (4).

Glossary

The technical terms and abbreviations given below represent only a selection of the full list of common technical terms and abbreviations.

Not all technical terms and abbreviations listed here are valid for the described mainboard.

ACPI	Advanced Configuration and Power Management Interface
AC'97	Audio Codec '97
AGP	Accelerated Graphics Port
AMR	Audio Modem Riser
AOL	Alert On LAN
APM	Advanced Power Management
ATA	Advanced Technology Attachment
BIOS	Basic Input Output System
BMC	Baseboard management controller
CAN	Controller Area Network
CPU	Central Processing Unit
CNR	Communication Network Riser
C-RIMM	Continuity Rambus Inline Memory Module
DIMM	Dual Inline Memory Module
ECC	Error Correcting Code
EEPROM	Electrical Erasable Programmable Read Only Memory
FDC	Floppy disk controller
FIFO	First-In First-Out
FSB	Front Side Bus
FWH	Firmware Hub
GMCH	Graphics and Memory Controller Hub
GPA	Graphics Performance Accelerator
I ² C	Inter Integrated Circuit
IAPC	Instantly Available Power Managed Desktop PC Design
ICH	I/O Controller Hub
IDE	Intelligent Drive Electronics
IPSEC	Internet Protocol Security

ISA	Industrial Standard Architecture
LAN	Local Area Network
LSA	LAN Desk Service Agent
MCH	Memory Controller Hub
MMX	MultiMedia eXtension
P64H	PCI64 Hub
PCI	Peripheral Component Interconnect
PXE	Preboot eXecution Environment
RAM	Random Access Memory
RAMDAC	Random Access Memory Digital Analogue Converter
RDRAM	Rambus Dynamic Random Access Memory
RIMM	Rambus Inline Memory Module
RTC	Real Time Clock
SB	Soundblaster
SDRAM	Synchronous Dynamic Random Access Memory
SGRAM	Synchronous Graphic Random Access Memory
SIMD	Streaming Mode Instruction (Single Instruction Multiple Data)
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Universal Serial Bus
VGA	Video Graphic Adapter
WOL	Wake On LAN